The taxonomy of *Boronia anemonifolia* and *B. rigens* (*Boronia* sect. *Cyanothamnus*, Rutaceae)

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Abstract

The taxonomy of *Boronia anemonifolia* A. Cunn. and *B. rigens* Cheel are discussed. Two new subspecies, *B. anemonifolia* subsp. *aurifodina* P.G.Neish and *B. anemonifolia* subsp. *wadbilligensis* P.G.Neish are described, and *B. anemonifolia* var. *variabilis* (Hook.f.) Benth. is raised to subspecific rank. All subspecies of *B. anemonifolia* are illustrated. The original description of *B. rigens* Cheel was based on discordant elements, and so is also revised. *Boronia anemonifolia*, *B. variabilis*, *B. polygalifolia* Sm. var. *robusta* Benth., *B.dentigera* F. Muell., and *B. dentigeroides* Cheel are lectotypified.

Introduction

While revising the east coast species of *Boronia* Sm. sect. *Cyanothamnus* (Lindl.) F. Muell. for the *Flora of Australia* treatment of Rutaceae it became apparent that the circumscriptions of a number of taxa needed revision. Here, we revise *B. anemonifolia* A. Cunn. and *B. rigens* Cheel. The remaining east coast species of *Boronia* sect. *Cyanothamnus* are discussed in a forthcoming paper by Duretto, except for *B. coerulescens* F. Muell. which was revised by Wilson (1998).

Material and Methods

Material: Herbarium specimens were made available from AD, BRI, CANB, HO, LUND, MEL, NE, NSW, PERTH and TCD; cibachromes and 35 mm transparencies were received from K, and 35 mm transparencies were received from BM. Herbarium abbreviations follow Holmgren *et al.* (1990). These specimens were augmented with material collected in the field from the entire range of each taxon. Five plants per population were collected where possible.

Leaf Anatomy: The central portion of leaves of all taxa were fixed in 70% ethanol. Fixed material was dehydrated through a graded ethanol series up to 100% ethanol, infiltrated with 100% LR-White (London Resin) through a resin/ethanol series, and polymerised at 60°C. Sections 2 µm in thickness were cut on a Reichert Ultracut ultra-microtome and stained with 0.05% toluidine blue solution (pH 4.4).

Taxonomic Descriptions: Descriptive terminology follows Briggs and Johnson (1979) and Weston (1990) for inflorescence structure, and Murley (1951) for seed surfaces. Conservation codes follow the format of Briggs and Leigh (1996).

Taxonomy

1. Boronia anemonifolia A. Cunn. in B. Field, *Geographical Memoirs of New South Wales* 330 (1825). *Type citation:* "Verge of the Regent's Glen, Blue Mountains." *Type:* Regents Glen, Blue Mountains, N.S. Wales, *A. Cunningham* No.43, Oct.1822 (lectotype, here designated, K, *ex. hb. cunninghan., n.v.*, (cibachrome MEL *2047064*, photgraph AD); isolectotypes MEL *256802*, NSW); rocky declivities and precipitous descents, ? *A. Cunnigham* (probable isolectotype K *n.v.* (cibachrome MEL *2047065*; photograph AD *99543144*)).

Erect, much branched *shrub* to 2.5 m tall, the branches terete to slightly quadrangular

with moderate cork development on older branches, the stems and leaves glandular punctate; the whole plant glabrous to pubescent, with hairs often restricted to area between the decurrent leaf bases on stems, larger stems becoming glabrous with age, all hairs simple, erect, straight or curved, to 0.5 mm. *Leaves* simple or 3–5-foliolate, or bipinnate with the lower leaflets ternate, the leaf in outline 4–18(–35) mm long, 2–25(–30) mm wide; petiole 2–9(–16) mm long, canaliculate above; rachis segments 3–7 mm long, canaliculate above, sometimes winged, widest at distal end; leaflets or simple leaves narrow-cuneate to cuneate or narrow-elliptic to elliptic or ovate or obovate, strongly conduplicate or plane, concolourous, dorsiventral, 2–9(–13) mm long, 1–4(–6) mm wide, tip often divided into three acute to obtuse lobes (Fig. 1), midrib slightly raised abaxially, spongy mesophyll continuous under midvein. *Inflorescence* axillary, 1–6(–9+)-flowered; peduncle 1–8 mm long; prophylls unifoliolate or tridentate, persistent with mature fruit, 0.5–5(–8) mm long, to 1.5(–3) mm wide; metaxyphylls to 0.5 mm long, sometimes absent; anthopodium 0.5–4(–6)mm long. *Sepals* broad-ovate, imbricate in bud, persistent with mature fruit, 1.5–2.5(–3.0) mm long, 0.8–1.5 mm wide, 1/5 to 2/3 of the length of the petals, tip acuminate; adaxial surface glabrous or margins ciliate or sparsely to densely puberulous; abaxial surface glabrous or sparsely puberulous. *Petals* white to pink, imbricate in bud, persistent or caducous with mature fruit, (3.5–)4–5.5(–6.5) mm long, 2–3 mm wide, midvein not raised on abaxial surface; adaxial surface with few scattered simple appressed hairs; abaxial surface glabrous or glabrescent or sparsely puberulous; tip with a small but distinct incurved hook. *Stamens* 8, erect, all fertile; filaments gradually tapering to anther connective, pilose on margins below slightly glandular tip, antesepalous filaments 1.3–2 mm long, antepetalous filaments 1.0–1.5 mm long; anthers attached subapically on filament, anther connective maroon; anther-apiculum prominent, glabrous or with a few simple hairs. Disc entire, glabrous, entirely within staminal whorl. *Ovary* glabrous, or with a few hairs between carpels; style pilose at base; stigma rounded, as wide or slightly wider than style. *Cocci* glabrous or with a few simple hairs along suture, 3–5 mm long, 1.8–2.2 mm wide. *Seeds* elliptical in outline, 2.5 mm long, 1.2–1.5 mm wide, black to black-brown, dull, slightly tuberculate, without wax crystals between tuberculae.

Typification: A single collection was cited in the protologue of *B. anemonifolia*: "Verge of the Regent's Glen, Blue Mountains." Cunningham collections (*Cunningham 43*) matching this information are lodged at K, MEL and NSW. The specimen lodged at K is in excellent condition, was part of Allan Cunningham's Australian herbarium and is designated the lectotype. Another specimen lodged at K, with only 'rocky declivities and precipitous descents' written on a label, was annotated by Melville in 1955 who stated it was part of the type. The specimen is probably part of the type collection and is here considered to be a probable isolectotype.

Taxonomic History: *Boronia anemonifolia* has a complex taxonomic history. Cunningham (1825) characterised *B. anemonifolia* as having trifoliolate leaves with each leaflet divided into two or three at the apex. Later, Hooker (1834) described a similar taxon from Tasmania as *B. variabilis* Hook. and Mueller (1855) described *B. dentigera* F. Muell. from Victoria. Mueller (1860-62) placed these latter two species, along with *B. anemonifolia*, *B. tetrathecoides* DC. (= *B. polygalifolia* Sm.), *B. lyssopifolia* Sieber ex J.D. Hook. (= *B. nana* Hook. var. *lyssopifolia* Melville), *B. nana*, and *B. bipinnata* Lindl. in synonomy under *B. polygalifolia*, concluding that *B. polygalifolia* was "one of the most variable species of the vegetable kingdom". He retained this synonymy in his 'Census of Australian Plants' (Mueller 1882, 1889) and in his 'Key to...Victorian Plants' (Mueller 1888). Bentham (1863) did not follow Mueller, and instead divided *B. anemonifolia* into, what he called, three 'tolerably distinct races': viz. var. *dentigera* (F. Muell.) Benth. (which included *Cyanothamnus tridactylitis* Bartl., = *Boronia anemonifolia* subsp. *anemonifolia*) from New South Wales, Victoria, Tasmania and Western Australia; var. *variabilis* (Hook.) Benth. (see subsp. *variabilis* (Hook.) P.G. Neish) from Tasmania; and

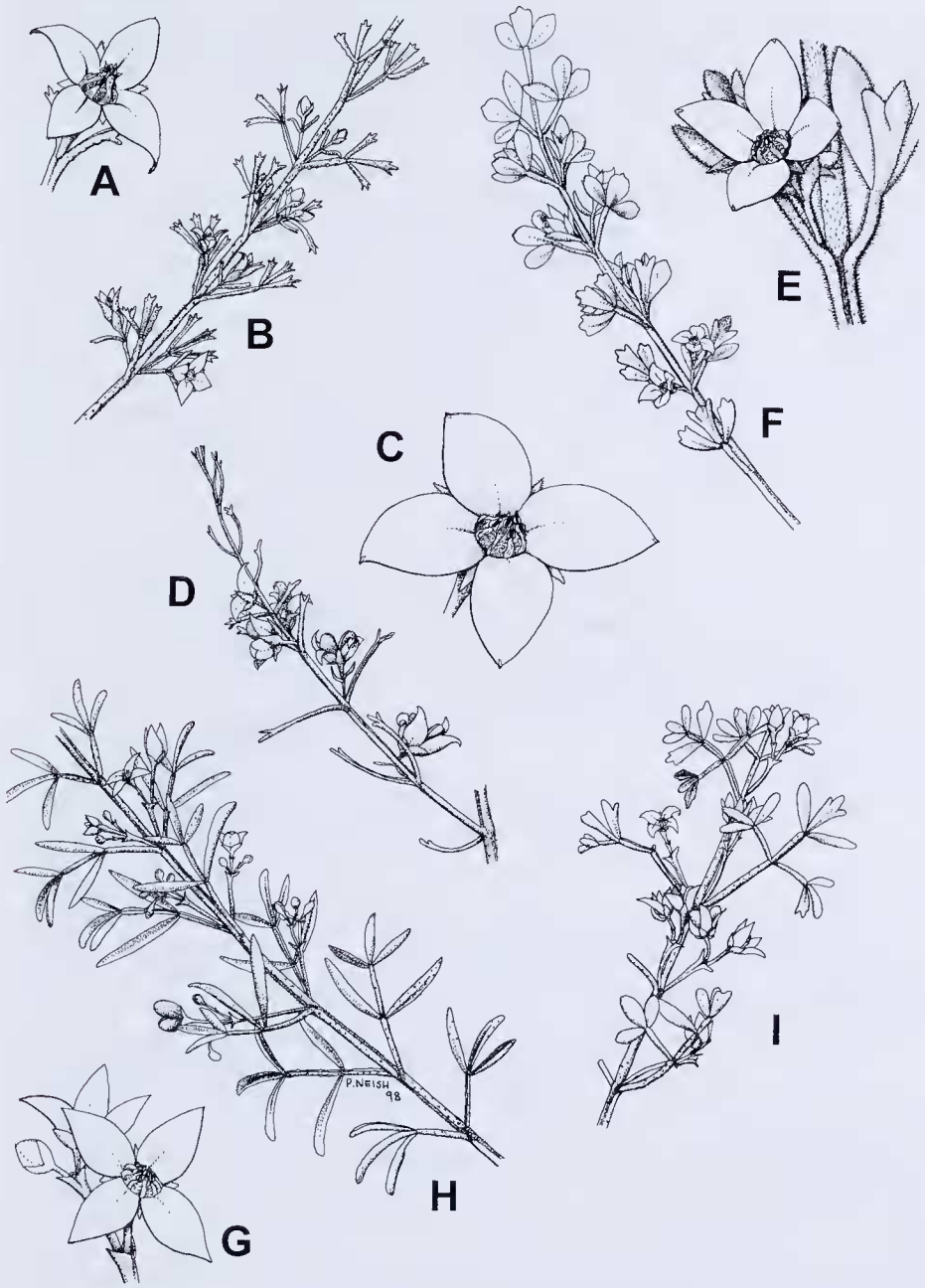

Figure 1. Habit and flowers of *B. anemonifolia*. **A–B** *B. anemonifolia* subsp. *anemonifolia*: **A** flower ×3 (*Neish et al. 42*, MEL *2032477*); **B** habit ×1 (*Coveny 11044*, CANB *333125*); **C–D** *B. anemonifolia* subsp. *aurifodina*: **C** flower ×3 (*Neish et al. 20,* MEL *2032453*); **D** habit ×1 (holotype, *Corrick 7892*, MEL *603327*); **E–F** *B. anemonifolia* subsp. *wadbilligensis*: **E** flower ×3 (*Neish et al. 44*, MEL *2032480*); **F** Habit ×1 (holotype, *Telford 3661*, CANB); **G–H** *B. anemonifolia* subsp. *variabilis* (Tasmania): **G** flower ×3 (*Neish et al. 68*, MEL *2032648*); **H** habit ×1 (*Moscal 8395*, HO *403360*); **I** *B. anemonifolia* subsp. *variabilis* (New South Wales): habit ×1 (*Coveny et al. 16565*, CANB *468216*)

var. *anethifolia* (Lindl.) Benth. (= *B. anethifolia* Lindl.) from Queensland and New South Wales. The Western Australian distributional data was based on his and Bartling's (1848) erroneous assumption that the type of *C. tridactylitis* was from Western Australia. Baker (1899) extended the range of var. *dentigera* to include Mittagong and Sugar Loaf Mountain near Braidwood. Ewart (1930) adopted Bentham's (1863) varieties in his 'Flora of Victoria'.

Rodway (1903) lists two varieties of *B. anemonifolia* in Tasmania, viz. var. *dentigera* and var. *variabilis*. Curiously, Rodway (1903) includes *B. variabilis* Hook. in synonomy under var. *variabilis* but does not include *B. dentigera* F. Muell. in synonomy under var. *dentigera*. Both of these varietal combinations had been made by Bentham (1863), but it cannot be assumed that Rodway was aware of these combinations. Reference to the work of Bentham is absent from the entire Rutaceae section of his work. He is inconsistent throughout his treatment in including synonomies and authors, and in author abbreviations. Rodway (1903) did make a new combination, *B. pinnata* Sm. var. *citriodora* (Hook.) Rodway, but he did not state it was new. As it cannot be assumed that Rodway (1903) was or was not intentionally describing new combinations, var. *dentigera* (F. Muell.) Rodway (see subsp. *anemonifolia*) and var. *variabilis* (Hook.) Rodway (see subsp. *variabilis*), are considered to be illegitimate names. Of these two varietal names only the latter is listed by Chapman (1991).

Cheel (1928) reinstated *B. dentigera* and described *B. dentigeroides* Cheel which was "similar in general appearance to *B. dentigera* but the leaves are more compound, being twice ternate, and the leaflets more or less flattened and dentate at the apex". *Boronia dentigeroides* and *B. dentigera* were placed in synonomy under *B. anemonifolia* by Willis (1957). Willis (1973), following Bentham (1863), retained *B. anemonifolia* var. *variabilis*, noting that it graded into the *dentigeroides* form of *B. anemonifolia* through the Furneaux group in Bass Strait. Curtis (1975) adopts a broad view of the species and recognises no varieties for Tasmania, while Weston and Porteners (1991) indicate that *B. anemonifolia* var. *anemonifolia* is the only variety found in New South Wales.

Four subspecies of *B. anemonifolia* are recognised in this treatment, including two newly described. The rank of subspecies is considered appropriate due to the presence of gradation between subspecies. For example subsp. *anemonifolia* grades into subsp. *variabilis* throughout east Gippsland in Victoria and in the south-east New South Wales, while subsp. *aurifodina* approaches subsp. *anemonifolia* in central Victoria. Morphology is consistent within populations and it seems that intermediates are not the result of hybrids, but simply a product of the variability of the species.

Distribution and ecology: *Boronia anemonifolia* is found in south-eastern Australia from near Warwick (SE Qld), through eastern New South Wales and eastern and central Victoria, to the islands of Bass Straight and northern and eastern Tasmania (Fig. 2). It is mainly found growing on and around sandstone and granite outcrops in eucalypt woodland or forest, where it can be the dominant component of the shrubby understorey, or heath or shrubland in exposed areas. It flowers for most of the year, but mainly from August to February. Fruiting specimens have been collected between October and January.

Etymology: The specific epithet alludes to the resemblance of the leaves to those of species of *Anemone* L. (Ranunculaceae).

Key to subspecies

1. Leaves simple or if trifoliate then petiole very much longer than leaflets; petals 5–6 mm long (central Vic.) ..... **1b.** subsp. ***aurifodina***
1: Leaves trifoliolate, pinnate or bipinnate, petiole c. same length as leaflets; petals (3.5–)4–5.5(–6.5) mm long (NSW, Vic., Tas.) 2
2. Petals not persistent with mature fruit, inflorescence (1–)3–6(–9+)-flowered;

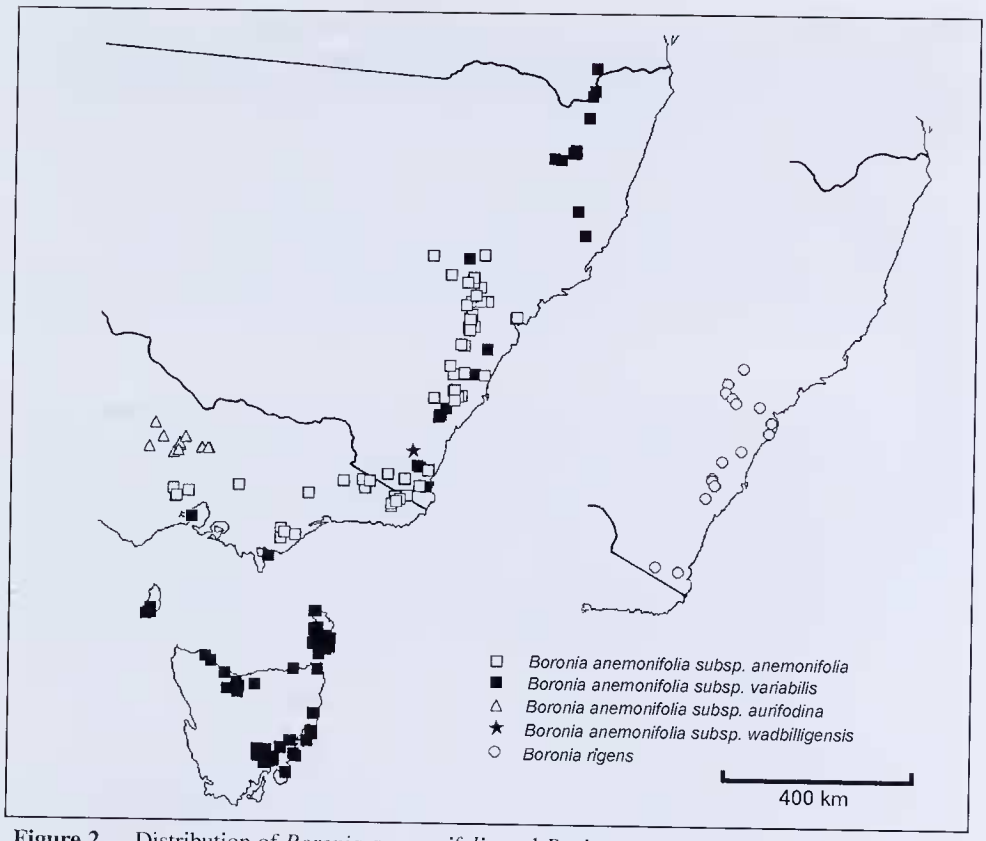

Figure 2. Distribution of *Boronia anemonifolia* and *B. rigens.*

prophylls simple, to 1.5 mm long; sepals 1–2 mm long, 1/5 to 1/3(–1/2) of the length of the petals; leaflets glabrous (rarely glabrescent) (Qld, NSW, Vic., Tas.)..... .....**1d.** subsp. ***variabilis***

2: Petals persistent with mature fruit, inflorescence 1–3(–6)-flowered; prophylls simple or tridentate, usually 1–8 mm long; sepals 1.5–3 mm long, (1/4–)1/2–3/4 length of petals; leaflets glabrescent to pubescent (NSW, Vic.) 3

3. Leaflets strongly conduplicate, < 2 mm wide, lateral leaflets usually tridentate (NSW, Vic.) ..... **1a.** subsp. ***anemouifolia***

3: Leaflets flat, 2–5 mm wide, fleshy, lateral leaflets usually entire (Wadbilliga Plateau, NSW).....**1c.** subsp. ***wadbilligeusis***

1a. Boronia anemonifolia A. Cunn. subsp. **anemonifolia.** *Cyanothamnus tridactylites* Bartl. in Lehmann, *Pl. Preiss* 2, 227. (1848). *Type citation:* "In regionibus interioribus Australiae meridionali-occidentalis m. Octobri a. 1840. hb. Preiss No. 2628". *Type: hb. preiss.* 2628 (holotype LD *95036-0984* transparencies MEL *2044581,* NSW; isotype MEL *256803).*

Boronia dentigera F. Muell.,*Trans. & Proc. Victorian Inst. Advancem. Sci.* 32 (1855). *Type citation*: "On sandhills near the La Trobe River, and in McCrae's Island. Also, near the Pendland [Pentland] Hills according to Mr. Dallachi." *Type*: Latrobe River, *F. v. Mueller* [26.iv.1853] (lectotype, here designated, MEL *257409*); Latrobe River, *F. v. Mueller*, May 1853 (syntype K *n.v.* (photograph AD *99548108*); McCrae's Island, F. Mueller, v.1853 (syntype MEL *257413*); Gippsland, Nov. Holl. aust., Dr F. Mueller

[1853?] (probable syntypes MEL *257411*, MEL *257412* (both from Sonder's herbarium)); Between Bacchus Marsh and Pentland Hills [Myrniong], F.v. Mueller [1853] (possible syntype MEL *256801*); Wimmera River, N.W. Vict., Dallachy [1853?] (possible syntype MEL *257410* (from Sonder's herbarium)). *B. anemonifolia* var. *dentigera* (F. Muell.) Benth., *Fl. aust.* 1: 321 (1863).

B. anemonifolia var. *dentigera* (F. Muell.) Rodway, *Tasmanian Fl.* 22 (1903) *nom illeg. non B. anemonifolia* var. *dentigera* (F. Muell.) Benth. (1863).

Boronia anemonifolia ssp. A (Typical Form) *sensu* Ross (1996, p. 129).

Illustrations: G.R. Cochrane, B.A. Fuhrer, E.R. Rotterham & J.H. Willis, *Flowers and Plants of Victoria* t. 309 (1968); A. Fairley and P. Moore, *Native Plants of the Sydney District*, 235, t. 817 (1989); P.H. Weston and M.F. Porteners, *Fl. New South Wales* 2: 230 (1991).

Shrub to 1.5 m tall. Branches glabrous or glabrescent or pubescent between decurrent leaf bases, leaves glabrescent to pubescent. *Leaves* trifoliolate or rarely bipinnate with the lower leaflets ternate, the leaf in outline 4–15(–20) mm long, 2–14(–19) mm wide; petiole 2–7(–10) mm long; leaflets strongly conduplicate or rarely flattened, narrow-cuneate, often canaliculate, tips tridentate; terminal leaflet 2–7(–9) mm long, 1–2(–2.5) mm wide, about as long as lateral leaflets. *Inflorescence* 1–3-flowered; peduncle 1–8 mm; prophylls often tridentate, (1–)2–5(–8) mm long, glabrescent to pubescent; anthopodium 1–5 mm long. *Sepals* glabrous or margins ciliate, or sparsely to moderately densely pubescent, 1.5–2(–3) mm long, 0.8–1.4 mm wide, (1/4–)1/2 the length of the petals . *Petals* glabrous or with few hairs along midrib or at tip, (3.5–)4–5.5(–6.5) mm long, 2–2.5(–3) mm wide, persistent with mature fruit.

Selected specimens examined (of c. 250 collections): **New South Wales**: Rylstone Dam on Cudgegong River, near wall, *J.H. Willis s.n.*, 6.x.1969 (MEL); Bundanoon Creek, below Echo Pt., *Constable s.n.*, 26.i.1956 (NSW *36706*); Blue Mountains, at base of Fort Rock, near Blackheath, 33°38'08"S 150°16'23"E, *P.G. Neish 33 M.F. Duretto & I Thompson*, 28.x.1995 (MEL); 200m W of Pass, c. 3km E of Endrick R. on Braidwood-Nerriga Rd, 35°05'S 150°08'E, *P.G. Neish 40 M.F. Duretto & I Thompson, 30.x.1995* (MEL, NSW, CANB); Tianjara Falls, along track heading N from falls along cliff line, 35°08'S 150°20'E, *R.J. Rudd 241*, 17.xi.1992 (CANB); Dr Georges Mountain summit, 36°40'S 149°54'E, *N.G. Walsh 1675*, 2.xii.1986 (BRI, HO, MEL); mountain peak 2.5km direct NE of Mount Poole, Yambulla State Forest, 37°11'30"S 149°32'15"E, *J.D. Briggs 1996 & D. Albrecht*, 21.vii.1986 (CANB); **Victoria**: Jawbones, *R. Webb 4 & E. Richards*, 26.ix.1965 (CANB); Brisbane Ranges NP, 4 km along Reids Road, going SW along the road from Rowsley, 37°44'S 144°19'E, *V. Stajsic 496*, 27.ix.1991 (AD, BRI, CANB, MEL, NSW); near summit of northern end of Cathedral Range, *T.B. Muir 2554*, 4.viii.1962 (MEL); Ballantyne Hills, Suggan Buggan, *A.E. Orchard 2491*, 25.viii.1970 (AD); Nunniong Plateau, along saddle running north c. 1 km east of end of Brumby Point track, 37°03'20"S 148°05'00"E, *M.G. Corrick 10164*, 2.i.1987 (MEL); Mt Kaye, East Gippsland, *N.A. Wakefield 3532*, 20.x.1946 (MEL); 5 miles [c. 8 km] ESE of Rosedale Post Office, 1 mile N of Limestone Quarry Road, *A.C. Beauglehole 38190*, 16.ii.1972 (MEL); Holey Plains Park, Pipeline Trk near intersection with Rosedale-Stradbroke Rd, 38°13'S 146°52'E, *P.G. Neish 81 & A. Vadala*, 11.iv.1996 (MEL); Holey Plains State Park, Chessum Road, 0.2 km west of its junction with Kelly track, T18, 38°13'20"S 146°55'00"E, *M.G. Corrick 9991 & B.J. Conn*, 14.x.1986 (CANB, MEL); slopes above south bank of Yambulla Creek, c. 200 m within Victoria, c. 2 km SW of Yambulla Peak, 37°16'50"S 149°23'30"E, *N.G. Walsh 2136, D. Albrecht & J. Westoway*, 9.ix.1988 (CANB, HO, MEL).

Notes: *Boronia anemonifolia* subsp. *anemonifolia* is variable in leaf size and in the number and shape of the leaflets. The various forms grade into each other. A typical specimen is illustrated in Figure 2(A, B). *Boronia dentigera* was based on one of these forms. Plants matching the type of *B. dentigera* are found at Holey Plains State Park near Sale in eastern Victoria. These plants are notable in having very pink petals, even when dry, pubescent foliage and a prostrate habit and may warrant further investigation.

Bentham (1863) and Rodway (1903) both state that *B. anemonifolia* var. *dentigera* (=

subsp. *anemonifolia*) is found in Tasmania, however all Tasmanian specimens examined are referable to the subsp. *variabilis* (see notes under subsp. *variabilis).*

Distribution and ecology: This subspecies is found on the tablelands and in coastal areas south from Rylstone (NSW), through eastern Victoria and west to the Brisbane Ranges. It is found on sandy or rocky soils in dry woodlands or heath often on exposed sandstone or granitic outcrops.

At MEL there is a collection of *B. anemonifolia* subsp. *anemonifolia* that was supposedly collected from the Grampians (W Vic.): viz. Grampians, *Miss Cowle s.n.*, x.1904 (MEL). Other collections made at the "Jawbones" (eg. *R. Webb 4 & E. Richards* [CANB]) have also been assumed to have come from the Grampians. The "Balconies" or "Asses ears" in the Grampians sometimes go by the name of the "Jawbones", but here the "Jawbones" are more likely to be from the Cathedral Ranges (south-central Victoria), where a number of collections of subsp. *anemonifolia* have been made. A search of the "Jawbones" in the Grampians did not locate any trace of this species. The only specimen seen of subsp. *anemonifolia* from the Northern Tablelands of New South Wales is from Mt Spirabo (*E.F. Constable s.n.* NE *29213*). However, this specimen is a duplicate of a specimen lodged at NSW (NSW *56122*) which is referable to subsp. *variabilis.* These two specimens are clearly not from the same plant and the absence of any other specimens of subsp. *anemonifolia* in the Northern Tablelands suggests that this record is spurious. A search of the area around Mt Spirabo located only subsp. *variabilis.*

Conservation status: *Boronia anemonifolia* subsp. *anemonifolia* is a fairly common subspecies that is adequately represented in reserves across its entire range.

1b. Boronia anemonifolia subsp. **aurifodina** P.G. Neish *subsp. nov.*

A varietate typica foliis unifoliolatis vel petioli quam foliolis multo longioribus, petalis 5–6 mm longis differt.

Type: Victoria: Rushworth Forest, west of Bailieston, 36°45'S, 144°56'E, *M.G. Corrick 7892*, 25.x.1981 (holotype MEL *603327*; isotypes HO *52023*, AD *98230303*).

Boronia anemonifolia ssp. C (Rushworth) *sensu* Ross (1996, p. 129).

Shrub to 1.2 m tall. Branches glabrous or pubescent between decurrent leaf bases. *Leaves* simple with trifid tips, though first few leaves on branches can be trifoliolate with leaflets very much smaller than petiole, entire leaf 5–15 mm long, simple leaves 0.5–2.5 mm wide, trifoliolate leaves to 6 mm wide; petiole 3–12 mm long; leaflets strongly conduplicate or flattened, very narrow-cuneate to 3 mm long, 0.5–2 mm wide if leaf compound. *Inflorescence* (1–)3(–6)-flowered; peduncle 1–4 mm; prophylls simple, 1.5–5(–7) mm long, sometimes tridentate, glabrous or pubescent; anthopodia 1–3 mm long. *Sepals* glabrous or margins ciliate or sparsely to densely pubescent, 1.5–2.5 mm long, 1.0–1.5 mm wide, c. 1/3 of the length of the petals. *Petals* 5–6 mm long, 3–4 mm wide, glabrous or glabrescent, persistent with mature fruit.

Other specimens examined: **Victoria**: Inglewood Flora Reserve, N of Rifle Range along Kingower Rd, c. 1.5 km SW of Town Centre, H36, *N.G. Walsh 2451*, 25.viii.1987 (MEL); Historic area, Castlemaine-Chesterton area, *A.C. Beauglehole 69011, E.R. Perkin & F.H. Blake,* 2.ix.1981 (MEL); Puzzle Flat, Bealiba, *J.H. Willis s.n.*, 4.ix.1936 (MEL); Murderer's Hill, Dunolly, *M.E. Phillips 424-425*, 20.ix.1961 (CANB); Mandurang, Koolamurt Park, Spring Gully Resevoir, M38, 36°49'S 144°18'E, *J. Samson s.n.*, 2.x.1997 (MEL *2042600*); McEldrew's Paddock, 1 mile [c. 1.6 km] NE of Eaglehawk near Bendigo, *R. Melville 1248, P. Morris, M. Cohn, H. Henkel & W. Perry*, 30.ix.1952 (K *n.v.*, MEL); c. 18.5km SSW of Bendigo P.O., *A.C. Beauglehole 50092*, 2.viii.1975 (MEL); Lightning Hill Road, Bendigo, *F. Robbins ACB 7259*, 11.ix.1947 (MEL); Diamond Hill, 17 km SSW of Bendigo, *A.C. Beauglehole 50045*, 29.vii.1995 (MEL); Moormbool, 36°48'S 144°54'E, *N.A. Wakefield s.n.*, ix.1939 (QRS *14601*); Kamarooka S.F., c. 400 m N of Campbell's Rd on road to Kamarooka, 36°34'S 144°23'E, *P.G. Neish 17 & K.R. Henshall,* 6.viii.1995 (MEL, NSW); Whipstick, *F. Robbins ACB7266*, 25.ix.1949 (MEL); Central Whipstick, along road 5, *W. Perry s.n.*, 10.ix.1961 (MEL *530742*); Rushworth State Forest, between main Graytown-Whroo

Road and Darrochs (Derricks) Dam, *J.H. Willis s.n.*, 4.ix.1974 (MEL); Graytown State Forest, S of intersection of Old Kilmore Road with Graytown-Rushworth Road, 36°44'S 144°57'E, *R.J. Fletcher 153*, 23.viii.1993 (MEL); Rushworth State Forest, on Whroo-Graytown Rd, corner of Darrochs Rd and extending to Johnson's Reef Road, 36°45S 144°47'E, *R.J. Fletcher 4*, 4.x.1991 (MEL, PERTH); Rushworth forest reference area, M42, *A.C. Beauglehole 69729*, 4.xi.1981 (CANB, MEL); 4.5 miles [c. 7.2 km] SE of Maldon, M46, *F. Filson 5111*, 17.viii.1963 (MEL).

Notes: *Boronia anemonifolia* subsp. *aurifodina* is segregated on the basis of its simple, strongly conduplicate leaves with tips divided into three very small points (Fig. 2D), and its larger petals (5–6 mm long). (Fig. 2C). Specimens from the Rushworth Forest have consistently simple foliage while those from the other populations often have trifoliolate leaves on the first few nodes of a branch. Plants from the Castlemaine area approach subsp. *anemonifolia* in leaf shape, but are distinguished by having a petiole much longer than the leaflets.

Distribution and ecology: The subspecies is confined to central Victoria in the goldfields area and is common in the Rushworth State Forest and widespread through the "Whipstick Forest" around Bendigo (Fig. 2). It is found in low open eucalypt woodland with a diverse understorey. The populations of this subspecies west of Bendigo towards Wedderburn represent the western most occurrence of *B. anemonifolia*.

Conservation status: *Boronia anemonifolia* subsp. *aurifodina* is restricted in range and is found mainly in state forests. Due to uncertainty regarding the long-term protection provided by State Forests the subspecies is regarded as not adequately preserved. Monitoring of all known populations is necessary to determine the viability of this subspecies and a management plan might be appropriate. A conservation code of 2R is considered appropriate at this stage.

Etymology: The subspecific epithet is derived from the Latin for gold-mine *aurifodina* (*aurum* (gold) and *fodire* (to dig)), and refers to the subspecies being confined to the goldfield region of central Victoria.

1c. Boronia anemonifolia subsp. **wadbilligensis** P.G. Neish subsp. nov.

A varietate typica foliolus applanatis latioribus (2-5 mm latis) differt.

Type: SE of Wadbilliga Trig. 46km ESE of Cooma, South Coast, New South Wales, 36°23'S 149°35'E, *I. R. Telford 3661* 19.xi.1973 (holotype CANB, transparency MEL *2059439*; isotypes PERTH *n.v.*, K *n.v.*, L *n.v.*, A *n.v.*)

Shrub to 1(–2) m tall. Branches pubescent, hair density greater between decurrent leaf bases, becoming glabrous with age. *Leaves* glabrescent to pubescent, 3–5-foliolate, the leaf in outline 8–18 mm long, 4–10(–18) mm wide; petiole 3–8 mm long; leaflets flattened, entire or tridentate at tip, obovate, oblanceolate or cuneate; terminal leaflet 4–9 mm long, 2–4(–6) mm wide, shorter or the same length as the lateral leaflets. *Inflorescence* (1–)3-flowered; peduncle 3–5 mm long; prophylls simple or tridentate, glabrescent to pubescent, 3–6 mm long, 1–1.5(–3) mm wide; anthopodium 2–3.5 mm long. *Sepals* 2–3 mm long, 1.0–1.5 mm wide, 1/2 to 3/4 the length of the petals; abaxial surface moderately densely pubescent. *Petals* (4–)4.5–5(–6) mm long, 2–3 mm wide, persistence unknown; abaxial surface sparsely pubescent with hairs concentrated along the midrib. Fruit and seed not seen.

Other Specimens Examined: New South Wales, Southern Tablelands: A prominent bluff 2.4 km direct north of Wadbilliga trig, 36°19'S 149°36'E, *J.D. Briggs 1818 and P.H. Weston*, 27.iii.1985 (CANB, HO, MEL, NSW); Spur SE of Wadbilliga trig., 36°20'S 149°36'E, *D.F. Blaxell 491*, 25.iv.1971 (CANB, MEL, NSW); c. 0.5 km north of Wadbilliga trig, *P. Gilmour W057*, 22.iv.1983 (CANB); Wadbilliga NP, Brogo Wilderness area, c. 15 km direct ENE of Kybean beside Razor Back Fire Trail, 36°20'S 149°36'E, *S. Donaldson 662, D. Mallinson, A.M. Lyne & I.R. Telford*, 15.xii.1995 (CANB *n.v.*, MEL, NSW *n.v.*, PERTH *n.v.*); Wadbilliga trig. fire trail, 14 km E of Tuross River crossing, 36°21'S 149°37'E, *M.D. Crisp 1238 and I.R. Telford*, 30.ix.1975

(CANB); On rocky outcrop on Spur 1.5 km SE of Wadbilliga trig., 36°21'S 149°37'E, *P.G. Neish 44, M. Duretto & I. Thompson*, 1.xi.1995 (MEL); Head of Tuross River, *R.H. Cambage s.n.*, xi.1908 (NSW); Northern end of Wadbilliga Mtn Plateau, *I. Olsen 2373*, 13.x.1974 (NSW).

Notes: *Boronia anemonifolia* subsp. *wadbilligensis* differs from subsp. *anemonifolia* in having pinnate leaves with wider and thicker leaflets (2–5 mm wide) and usually entire lateral leaflets, and from subsp. *variabilis* by the pubescent leaves, petals, and the longer prophylls and sepals (Figs. 2E, F).

Distribution and ecology: This subspecies is restricted to the Wadbilliga Plateau in south-eastern New South Wales (Fig. 2). It is found in eucalypt woodland or low *Allocasuarina nana* (Sieber *ex* Sprengel) L. Johnson heath on rocky outcrops and ridge tops between 1200 and 1300 m. Flowering material has been collected in October and December.

Conservation status: All known collections of *B. anemonifolia* subsp. *wadbilligensis* have been made within five kilometres of each other in Wadbilliga National Park. A conservation code of 2RC+ is appropriate. Further field work is required to ascertain the full range of this subspecies.

Etymology: The subspecific epithet is derived from the name of the major landmark, the Wadbilliga trig. point, within the distributional range of this subspecies.

1d. Boronia anemonifolia subsp. **variabilis** (Hook.) P.G. Neish, comb. nov. *Boronia variabilis* Hook., J. Bot. (Hooker) 1: 255 (1834). *Type citation:* "Mr. Lawrence, (1831), Mr. Gunn, (n. 8.) - ß Mr. Gunn, (n. 214) - γ Mr. Gunn, (n. 303.), who observes that it is called Lemon-plant." *Type*: Van D. Land [Tasmania], Mr Gunn n. 214 (lectotype, here designated and by implication by Hooker, J. Bot. (Hooker) 2, 418 (1840), K (*ex hb. hook.*, 4 sprigs on lower half of sheet) *n.v.*, cibachrome MEL *2041296. B. anemonifolia* var. *variabilis* (Hook.) Benth., *Fl. aust.* 1: 321 (1863).

B. anemonifolia var. *variabilis* (Hook.) Rodway, *Tasmanian Fl.* 22 (1903) *nom illeg. non B. anemonifolia* var. *variabilis* (Hook.) Benth. (1863).

Boronia dentigeroides Cheel, *J. Roy. Soc. N.S. Wales* 62: 301 (1929). *Type citation*: "Braidwood, *W. Baeuerlen* [sic]; Clyde Mountain, near Nelligen, J.L. Boorman; Belmore Falls, W. Forsythe; Menangle, Mr. Harper; Timburra (Stuart) ex Herb. Melbourne, labelled *B. polygalifolia* var. *anemonifolia*; Flinder's Island (Gulliver), labelled *B. anemonifolia*." *Type*: Timburra [Timbarra, E of Tenterfield, 29°01'S 152°13'E], *C. Stuart s.n.* (lectotype, here designated, NSW *377539*; isolectotypes MEL *270372*, MEL *270373*); Marengenburg, Braidwood, *W. Bäuerlen s.n.*, ix.1890 (syntype NSW *385530*); Braidwood District, *W. Bäuerlen s.n.*, ix.1884 (possible isosyntype MEL *251075*); Braidwood District, *W. Bäuerlen s.n.*, xii.1884 (possible isosyntype MEL *270174*); Braidwood, N.S.W., *W. Bäuerlen* s.n. (isosyntype K *n.v.*, photograph AD *99548104*); Clyde Mountain, near Nelligen [35°33'S 149°57'E], *J.L. Boorman s.n.*, iii.1909 (syntype NSW *385289*); Clyde Mountain or Sugarloaf Mountain, *J.L. Boorman s.n.*, ix.1915 (possible syntype NSW *385321*); Belmore Falls, W. Forsythe (syntype ? NSW *n.v.*); Menangle, *Mr Harper s.n.*, viii.1894 (syntype NSW *385576*); Flinder's Island, Gulliver (syntype ? NSW *n.v.*).

Boronia anemonifolia ssp. B (Wilsons Promontory) *sensu* Ross (1996, p. 129).

Illustrations: N.C.W. Beadle and L.D. Beadle, *Students Flora of North Eastern New South Wales Part IV*, 554, Fig. 243B (1980); W.M. Curtis, *The Student's Flora of Tasmania*, 105 (1975); M. Cameron, *Guide to Flowers and Plants of Tasmania*, 110 (1981).

Shrub to 1.5(–2.5) m tall. Branches glabrous or pubescent between decurrent leaf bases or rarely around entire stem (Sensation Gorge, Tas.), leaves prominently glandular, glabrous or glabrescent. *Leaves* 3–5-foliolate or bipinnate, the leaf in outline 13–25(–35) mm long 9–25(–30) mm wide; petiole 5–9(–16) mm long; leaflets simple, flattened or

conduplicate, entire or tridentate, broad-cuneate to oblanceolate, 3–8(–13) mm long, 1–4 mm wide, terminal leaflets usually shorter than lateral leaflets. *Inflorescences* (1–)3–6(–9+)-flowered; peduncle 2–10 mm long; prophylls glabrous, simple, linear, 0.5–1.5(–2.5) mm long; anthopodium 1.5–4(–6) mm long. *Sepals* glabrous, 1–2 mm long, 0.8–1.2 mm wide, 1/5–1/3(–1/2) of the length of the petals. *Petals* 3–5 mm long, 2.5–3 mm wide, caducous, sometimes lately; abaxial surface glabrous or glabrescent.

Selected specimens examined (of c. 200 collections): **Queensland**: About 1km ENE of Gambubal Forest Station, E of Warwick, 28°14'S 152°23'E, *A.R. Bean 10980* 6.x.1996 (BRI *n.v.*, NSW *n.v.*, MEL); Paddy's Knob, Condamine Gorge, Lot 13, Parish of Emuvale, 28°17'S 152°22'E, *K. Sparshott KS45 & P. Sparshott*, 9.iii.1993 (BRI); Mt Mitchell [possibly 28°04'S 152°23'E], *anon.* (MEL); **New South Wales**: On slope above Boonoo Boonoo River, c. 100 m upstream from Boonoo Boonoo falls, 28°48'S 152°10'E, *R.G. Coveny 16565 & A.J. Whalen*, 14.x.1993 (BRI, CANB, NSW, NBG *n.v.*, P *n.v.*, NY *n.v.*, CHR *n.v.*); Hill c. 1.8km NNE of Mt Spirabo, 29°20'00"S 152°05'05"E, *P.G. Neish 31 M.F. Duretto & I Thompson*, 26.x.1995 (MEL); Pheasant Mtn, 2 km E of Backwater on Paddy's Gully Rd, 30°03'S 151°55'E, *J.B. Williams s.n.*, 30.x.1965 (NE *49121*, NSW); Mt Currockbillly, Budawang Range, Southern Tablelands, 35°25'S 150°02'E, *A. Sikkas and I.R. Telford BR405*, 7.xii.1973 (CANB, NSW); 4.4 km west of bridge at Numeralla, then 100 m south of road, 36°11'S 149°18'E, *J.D. Briggs 1885*, 15.vi.1985 (BRI, CANB, MEL); 6.2 km SW of Bronte trig. and 6.6 km E of Bemboka Peak, 36°36'10"S 149°42'30"E, *D.E. Albrecht 2953*, 4.xi.1986 (CANB, MEL); The Pinnacles, Ben Boyd NP, 36°50'30"S 149°55'20"E, *D.E. Albrecht 2282*, 10.xii.1985 (MEL, NSW); **Victoria**: Corner Inlet, Sunday Island, *C. I. Skewes s.n.*, 2-6.ix.1952 (AD, CANB, MEL); Snake Island, Corner Inlet on NW edge of "The Gulf", 3.25 miles [c. 5.2 km] WSW of Sunday Island, *C.N. Rossiter s.n.*, 14.vi.1965 (MEL *516718*); Port Arlington, *Dickinson s.n.*, 1870 (MEL); **Tasmania**: track to Seal Rocks, King Island, 40°06'S 143°58'E, *M.I.H. Brooker 5855*, 3.iv.1978 (CANB, HO); Furgusons Gully, Flinders Island, 40°11'S 148°04'E, *P.J. Cullen s.n.*, 21.ix.1990 (HO *126142*); Burgess Cove, Rocky Cape, 40°52'S 145°30'E, *P. Collier 1126*, 11.i.1986 (HO); Mt Roland, 41°28'S 146°16'E, *D.A. & A.V. Ratkowsky 1308*, 27.x.1974 (HO); Sensation Gorge, 6 km W of Mole Creek, 41°33'S 146°20'E, *P. Collier 5123*, 12.i.1991 (HO); Sensation Gorge, c. 5 km W of Mole Creek, 41°33'S 146°20'E, *P. G. Neish 57-62, M.F. Duretto & K.R. Henshall*, 6.i.1996 (MEL); Cape Tourville, below the lighthouse, 42°07'S 148°22'E, *J. Armstrong 879.*, 18.v.1976 (HO); Bluff River Gorge, 42°32'S 147°40'E, *P. Collier 1553*, 31.viii.1986 (HO); Midway Point, 42°48'S 147°31'E, *A Moscal 8395*, 3.viii.1984 (AD, HO); base of St Pauls Dome, *C. Stuart s.n.*, xi.1848 (MEL); slope near St Pauls Dome, *W.H. Archer s.n.* (NSW *3855335*).

Taxonomy: When describing *B. variabilis*, Hooker (1834) cited four specimens which he classified into three forms (see *Type citation*). Of these four collections, Hooker (1840) excludes all but the ß form (*Gunn 214*) from *B. variabilis* indicating that he thought his α and γ forms of *B. variabilis* were actually forms of *B. tetrandra* Labill. These specimens can be confidently placed in *B. pilosa* Labill. *s. lat.* which Hooker (1840) also considered to be a form of *B. tetrandra*. Following Hooker (1840) the K specimen of *Gunn 214* is chosen as the lectotype of *B. variabilis*.

When Cheel (1928) described *B. dentigeroides* he included all mainland populations of subsp. *variabilis* in it. However, his description was preceded by a week by an account by Penfold (1928) who described the essential oils of *B. dentigeroides*. In doing so, Penfold legitimately described *B. dentigeroides*. It was obviously not Penfold's intention to formally describe this species as he gives Cheel as the authority and states that "the botany of this new species, *Boronia dentigeroides*, is fully described by its author, Mr. E. Cheel, in the current issue of the Society's Journal". Later authors have quite rightly ignored Penfold's description.

Chapman (1991) in the *Australian Plant Name Index* lists *B. anethifolia* A. Cunn. var. *variabilis* (Hook.) Benth. Bentham (1863) did not make this combination but did relegate *B. anethifolia* to varietal status under *B. anemonifolia*.

Notes: W.J. Hooker (1834, 1840) cited only collections from Tasmania when discussing *B. variabilis*, while J.D. Hooker's (1855) concept of *B. variabilis* included plants from New South Wales and south-eastern Australia. Later, *B. variabilis* was considered a

Tasmanian endemic (c.f. Bentham 1863; Curtis 1956) and Cheel (1928) included all mainland plants in his new species, *B. dentigeroides*, a name that never gained wide acceptance. Following Bentham (1863), Willis (1957) considered *B. variabilis* a variety of *B. anemonifolia* and noted that the two varieties were "grading imperceptibly on the islands of Bass Strait into the *dentigeroides* form of *B. anemonifolia*." Curtis (1975) included *B. variabilis* in synonymy under *B. anemonifolia* and stated that "the species is polymorphic."

Mainland populations of subsp. *variabilis* have 3–5-foliolate or bipinnate leaves and leaflets usually with rounded tridentations at the apex (Fig. 1I). Plants from Tasmania have 3–7-foliolate leaves and often quite narrow leaflets that are entire and sometimes recurved (Fig. 1H). These two forms grade into each other, but are united by the presence of very short sepals, short prophylls, usually glabrous leaves and pubescence on stems being confined to between the decurrent leaf bases.

Specimens of subsp. *variabilis* from St Paul's Dome in the north-west of the island (eg. *Stuart s.n.*, xi.1848, MEL *275677*; *Archer s.n.*, NSW *385335*) resemble subsp. *anemonifolia* in some respects. The long prophylls, long sepals, and persistent petals are characteristic of subsp. *anemonifolia*, but the glabrous, wider leaves and numerous flowers resemble that of subsp. *variabilis*. These specimens are here treated to be subsp. *variabilis*.

The small population of plants at Sensation Gorge (Tasmania; *Collier 5123, Neish 57-62*) are notable in being pubescent over the entire stem, rather than just between the decurrent leaf bases, and in having glabrescent leaves. Subspecies *variabilis* is known from south-eastern Queensland from collections near Warwick (*A.R. Beau 10980, Sparshott 45*). The *Sparshott 45* collection from Paddys Knob is notable for its slightly pubescent foliage. No other specimens have been recorded from Queensland except for a collection labelled only as Mount Mitchell (MEL *275678*) which may be near Toowoomba.

Boronia anemonifolia subsp. *variabilis* differs from subsp. *anemonifolia* by having entire, flattened and usually glabrous leaflets, caducous petals, minute prophylls and smaller, but more numerous flowers, and from subsp. *wadbilligensis* by the smaller prophylls and glabrous to glabrescent leaves (Figs 1G-I).

Distribution and ecology: *Boronia anemonifolia* subsp. *variabils* is found in south-eastern Queensland, the Northern, Central and Southern Tablelands and Central and South Coast of New South Wales, on the Bass Straight Islands, across northern Tasmania and on the hillsides around Hobart (Fig. 2). In Victoria, the subspecies is known only from Snake and Sunday Islands north of Wilsons Promontory and an 1870 collection from Portarlington on the Bellarine Peninsula. This area has been heavily degraded since settlement and recent searches in the immediate vicinity of Portarlington have failed to locate any plants of *B. anemonifolia*. *Boronia anemonifolia* subsp. *variabilis* is found in heath, open woodland or open forest on sandy and rocky soils sometimes on or near sandstone or granite outcrops.

Conservation status: A common subspecies that is adequately represented in reserves over its full range.

Etymology: The subspecific epithet refers to the variable nature of the foliage which can be trifoliolate, pinnate or bipinnate.

2. Boronia rigens Cheel, *J. & Proc. Roy. Soc. New S.Wales* 62: 297 (1929), a nom. et stat. nov. for *Boronia polygalifolia* Sm. var. *robusta* Benth., *Fl. aust.* 1: 321 (1863). *Type citation*: "Port Jackson, *Sieber*, n. 283; Blue Mountains, A. Cunningham; Moreton Island, *F. Mueller*." *Type*: New Holland, *Sieber* Fl. Novae holl. 283 (lectotype, here designated, K *n.v.*, cibachrome MEL *2041262*; isolectotypes MEL *257414*, MEL *62147*); Moreton Island [label locality information probably incorrect], *F. Mueller s.n.*, viii.1855 (syntypes MEL *257415*, MEL *257416*); Blue Mountains, *A. Cunningham* (syntype ? K *n.v.*).

Illustrations: A. Fairley and P. Moore, *Native plants of the Sydney District*, 235, t. 816 (1989); P.H. Weston and M.F. Porteners, *Fl. New South Wales* 2: 230 (1991).

Prostrate to ereet *shrub* to 30 em tall and wide, the branehes terete with moderate cork development on older braneh es; the stems and leaves not obviously glandular to slightly glandular; the whole plant glabreseent to pubeseent, with hair density greatest between deeurrent leaf bases on stems, leaves glabreseent or sparsely to moderately pilose; all hairs simple, ereet, straight, to 1 mm long. *Leaves* smooth, 3(–5–7)-foliolate, rarely bipinnate, the leaf in outline 4–10(–12) mm long, 4–12 mm wide; petiole 1.5–5 mm long; rachis segments 1–3 mm long; leaflets linear to narrow elliptie, plane to earinate, coneolourous, dorsiventral, (2–)4–8(–12) mm long, (0.5–)1–2 mm wide, lamina dotted with small sunken glands, hairs often eoneentrated along abaxial midrib, tip aeute, midrib raised abaxially and distinetly red or brown, spongy mesophyll eontinuous under midvein, eell layer immediately above abaxial epidermis and below the midvein with seeondary thickening. *Inflorescence* axillary, 1–3-flowered, glabrous or sparsely to moderately dense pilose; pedunele 0.5–2 mm long; prophylls unifoliate, 0.5–1.5 mm long; metaxyphylls to 1.5 mm long, sometimes absent; anthopodium 0.5–1.5 mm long. *Sepals* broad ovate to deltate, imbrieate in bud, persistent with mature fruit, 1.2–2.0 mm long, 0.5–1.2 mm wide, e. 1/2 length of petals, tip aeute; adaxial surfaee and margin eovered in short woolly hairs that are e. 0.2 mm long, beeoming glabrous towards base; abaxial surfaee glabrous or sparsely to moderately pilose, hairs eoncentrated along the midrib. *Petals* white or pink, imbrieate in bud, 2.5–3.5 mm long, 1.0–2.5 mm wide, glabrous or margins sparsely eiliate, persistent with mature fruit, glands often concentrated along midrib, midvein not raised on the abaxial surfaee, tip with a small but distinet ineurved hook. *Stamens* erect, 8, all fertile; filaments gradually tapering to anther connective, pilose on margins below the slightly glandular, obtuse tip; antesepalous filaments c. 1.5 mm long; antepetalous filaments 1.0–1.2 mm long; anthers attaehed sub-apieally on the filament, anther-conneetive maroon; anther-apieulum prominent, glabrous. Dise entire, entirely within staminal whorl, glabrous. *Ovary* glabrous, or with a few hairs between earpels; style pilose at base, or whole style pilose; stigma rounded, as wide or slightly wider than style. *Cocci* glabrous or sparsely pubescent, 2.5–3.5 mm long, 1.5–2.0 mm wide. Seeds elliptieal in outline, 2–4 mm long, 1–2 mm wide, blaek or blaek-brown, dull, slightly tuberculate, mieroseopie wax crystals on surface between tubereulae.

Selected specimens examined (of c. 100 collections): **New South Wales**: Head of Coricudgy Ck, 3 miles [c. 4.8 km] N of Mt Coricudgy, *L.A.S. Johnson s.n.*, 30.viii.1951 (NSW *17273*); 1 mile east of Currant Mountain Gap, Rylstone District, *B.G. Briggs s.n.*, 6.viii.1961 (NSW *385503*); Bunboori Ck, via Waratah Ridge, Blue Mountains NP, 33°25'S 150°17'E, *P. Hind 6340*, 11.iii.1991 (NSW); Mount Banks, on North slope, 33°36'S 150°21'E, *D. Benson 2319 & D. Keith*, 15.ii.1985 (NSW); La Perouse, 33°59'S 151°14'E, *R. Coveny 11199*, 28.vii.1982 (CANB); 3.8 km along Tevotts Road, c. 6 km SW of Bundanoon, 34°41'S 150°18'E, *P. Ollerenshaw 1740*, 28.vii.1985 (CANB); Northern Budawang Range, Wog Wog Creek - Corang Trig track, 35°27'S 150°05'E, *I.R. Telford 9549*, 15.viii.1976 (CANB); Endeavour Reserve, around base of communication tower, c. 1 km South of Bombala, 36°55'S 149°15'E, *P.G. Neish 74 & A.J. Vadala*, 10.iv.1996 (MEL).

Notes: Cheel's eoncept of *B. rigens* was based on discordant elements that included speeimens of *B. nana* from South Australia (Mt. Lofty Range) and Vietoria. Although superficially similar to *B. nana* var. *nana*, *B. rigens* can be distinguished by leaflets with distinetly raised midribs on the abaxial surfaee that are usually red and darker than the rest of the leaf. This dark eolouration is due to large pigment-filled cells in the midrib.

Distribution and ecology: *Boronia rigens* is found between Bombala and Rylstone on the Southern and Central Tablelands and in coastal areas around Sydney, New South Wales (Fig. 2). It is usually found in woodland or heath on sandy or stony soils associated with sandstone.

One of the type collections of *B. polygalifolia* var. *robusta* is a speeimen colleeted by

Ferdinand Mueller which supposedly came from Moreton Island near Brisbane, south-eastern Queensland. No other collections of *B. rigens* have been made north of Rylstone and it is assumed that Mueller's specimens were mislabelled.

Conservation status: Though found over a limited area, *B. rigens* is well represented in National Parks and is not considered to be rare or threatened.

Etymology: The specific epithet is derived from the Latin, *rigens*, for stiff or rigid and is possibly referring to the stiff or rigid habit of the plant as compared to the lax *B. polygalifolia* and *B. nana*.

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